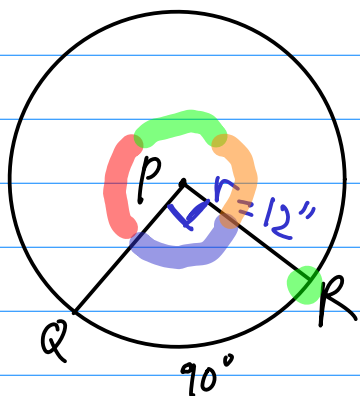


6.7: Arc Length

Ex: $\odot P$ w/d = 24"; $m\widehat{RQ} = 90^\circ$. Find the length of \widehat{RQ} .



$$\frac{\cancel{90}}{\cancel{360}} \cdot \frac{24}{4}$$

→ length of \widehat{RQ} is a fraction of the \odot 's circumference

$$\begin{aligned} C &= 2\pi r \\ &= 2\pi(12") \\ &= 24\pi" \end{aligned}$$

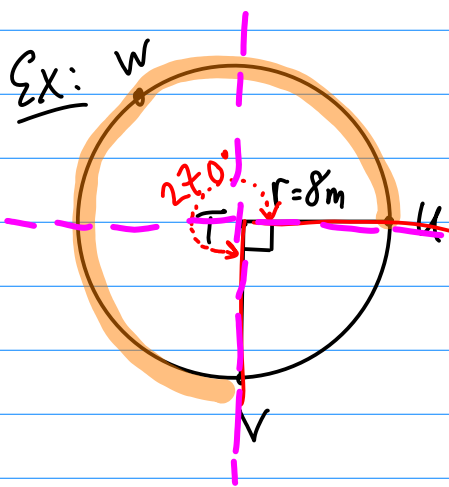
$$\text{length of } \widehat{RQ} = \frac{1}{4} \cdot 24\pi"$$

$$= \frac{1}{4} \cdot \frac{24}{1} \pi"$$

$$= \frac{24}{4} \pi" = \boxed{6\pi"} \quad \times \frac{1}{4}$$

• Arc length is a fraction of \odot 's Circum.

$$\ast \text{ Arc Length} = \frac{m. \text{ of arc}}{360^\circ} \cdot 2\pi r$$



Find length of \widehat{WV} .

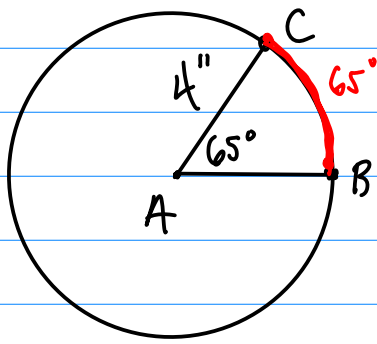
$$\text{length of } \widehat{WV} = \frac{270^\circ}{360^\circ} \cdot 2\pi(8m)$$

$$= \frac{3}{4} \cdot \frac{16}{1} \pi m$$

$$= \frac{\cancel{3} \cdot \cancel{16}}{\cancel{4}} \pi m = \boxed{12\pi m}$$

$$\text{Arc Length} = \frac{\text{m. of arc}}{360^\circ} \cdot 2\pi r$$

Ex:



Find length of \widehat{BC} .

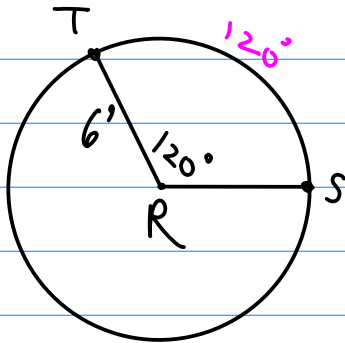
$$\text{length of } \widehat{BC} = \frac{\cancel{13}^{\cancel{65}}}{\cancel{360}^{\cancel{72}}} \cdot 2\pi (4'')$$

$$= \frac{13}{72} \cdot 8\pi''$$

$$= \frac{13 \cdot \cancel{8}^1}{\cancel{72}^9} \pi''$$

$$= \boxed{\frac{13}{9} \pi''}$$

Ex:



Find length of \widehat{ST} .

$$\text{length of } \widehat{ST} = \frac{\cancel{1}^{\cancel{120}}}{\cancel{3}^{\cancel{360}}} \cdot 2\pi (6')$$

$$= \frac{1}{3} \cdot 12\pi'$$

$$= \frac{12}{3} \pi' = \boxed{4\pi'}$$